

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

COXCOM, INC.)	
)	
Plaintiff,)	
)	
v.)	C.A. No. _____
)	
REMBRANDT TECHNOLOGIES, L.P.)	
)	
Defendant.)	

COMPLAINT FOR DECLARATORY JUDGMENT

Plaintiff, CoxCom, Inc. ("CoxCom"), files this complaint for declaratory judgment relief against Defendant, Rembrandt Technologies, L.P. ("Rembrandt"), and avers as follows:

PARTIES

1. Plaintiff CoxCom is a corporation organized under the laws of the State of Delaware with its principal place of business at 1400 Lake Hearn Dr., Atlanta, GA 30319.

2. On information and belief, Rembrandt is a corporation organized under the laws of the State of New Jersey with its principal place of business at 401 City Avenue, Suite 185, Bala Cynwyd, PA 19004.

JURISDICTION AND VENUE

3. This action is for declaratory relief of non-infringement, invalidity and/or unenforceability of U.S. Patent No. 5,008,903 (the "'903 Patent") that arises under the United States patent laws (35 U.S.C. §§ 101, et seq.). The Court has subject matter jurisdiction over this action pursuant to the Declaratory Judgment Act (28 U.S.C. §§ 2201 and 2202) and 28 U.S.C. §§ 1331 and 1338.

4. This Court has general and specific personal jurisdiction over Rembrandt because Rembrandt transacts business within this judicial district, and has purposefully availed itself of the laws and protection of the courts in Delaware in filing a prior patent infringement action involving the '903 Patent in the United States District Court for the District of Delaware (C.A. No. 06-635-GMS). This action seeks a declaration that CoxCom has not infringed any valid claims of the '903 Patent.

5. Venue is proper in this district pursuant to 28 U.S.C. § 1391(b) and (c) and 1400(b).

BACKGROUND

6. CoxCom is a cable service provider that offers various cable services to subscribers, including Cox® Cable, advanced digital video programming services under the Cox® Digital Cable brand, and local and long-distance telephone services under the Cox® Digital Telephone brand. CoxCom also offers high speed Internet access under the Cox® High Speed Internet brand.

7. Rembrandt is a company that invests in patents, but does not practice them. Instead, it acquires rights to patents and sues entities it believes infringe upon those patents.

8. Upon information and belief, Rembrandt maintains or is associated with a website at <http://www.rembrandtfund.com>. Exhibit A is a true and correct copy of excerpts from its website. According to its website, Rembrandt “shoulders the legal, financial, and business risks associated with pursuing patent pirates and provides the capital and expertise required to litigate complex patent infringements.” *Id.* To pursue such patent infringement litigation, Rembrandt maintains a “staff of in-house professionals and outside consultants” that “includes scientists, inventors, financial analysts, lawyers, and researchers who are expert at identifying the validity

and market value of patents and Intellectual Property (IP), and securing revenue for these inventors and companies as well as Rembrandt's investors." *Id.* Rembrandt claims to have raised \$150 million "to acquire patents and litigate patent infringement." *Id.*

9. In short, Rembrandt's business is to initiate lawsuits to enforce patent rights. Rembrandt is engaged in the enforcement of patents that it has acquired in a number of different industries. For example, in February 2006, Rembrandt initiated a patent suit against Sharp Corporation and Sharp Electronics Corporation in an action entitled *Rembrandt Technologies, L.P. v. Sharp Corporation and Sharp Electronics Corporation*, 2:06-CV-00047-TJW (E.D. Tex.). An apparent affiliate of Rembrandt, Rembrandt Vision Technologies, L.P., has also initiated a patent suit against Bausch & Lomb Incorporated and Ciba Vision Corporation, in an action entitled *Rembrandt Vision Technologies, L.P. v. Bausch & Lomb Incorporated and Ciba Vision Corporation*, Case No. 2:05-CV-00491-TJW (E.D. Tex.).

**REMBRANDT'S ENFORCEMENT CAMPAIGN AGAINST COXCOM AND OTHER
CABLE SERVICE PROVIDERS**

10. Rembrandt has expanded its enforcement efforts to target members of the cable industry, including CoxCom and its affiliates.

11. On June 1, 2006, Rembrandt filed a complaint in the United States District Court for the Eastern District of Texas, entitled *Rembrandt Technologies, L.P. v. Charter Communications, Inc., Charter Communications Operating, LLC, Cox Communications, Inc., CoxCom, Inc., Cox Enterprises, Inc., Cablevision Systems Corporation and CSC Holdings, Inc.*,¹ Case No. 2:06-CV-223 ("Texas Action"). A true and correct copy of the complaint filed in the Texas Action is attached as Exhibit B. The Texas Action alleges that defendants, including CoxCom, infringe multiple patents by operating digital cable systems in which they provide

cable television, high speed internet, and Voice over IP (VoIP) services to their subscribers. On October 16, 2006, Rembrandt dismissed Cablevision Systems Corporation and its affiliate CSC Holdings, Inc. without prejudice from the Texas Action.

12. On September 13, 2006, Rembrandt filed suit against Time Warner, in a case entitled *Rembrandt Technologies, L.P. v. Time Warner Cable, Inc.*, Case No. 2:06-CV-369 (“Time Warner Action”). A true and correct copy of the Time Warner complaint is attached hereto as Exhibit C. In the Time Warner Action, Rembrandt asserts infringement of several U.S. patents, including the ‘903 Patent. Rembrandt claims that Time Warner infringed “the ‘903 Patent by providing high speed cable modem internet products and services to subscribers.” *Id.* A true and correct copy of the ‘903 Patent is attached hereto as Exhibit D.

13. Rembrandt has also pursued its business of enforcing patent rights through litigation in Delaware. On October 13, 2006, Rembrandt filed a patent infringement action against Cablevision Systems Corporation, et al., that is entitled *Rembrandt Technologies, L.P. v. Cablevision Systems Corporation and CSC Holdings, Inc.*, Case No. 1:06-CV-00635-GMS (“Cablevision Action”). In the Cablevision Action, Rembrandt asserts a variety of patents, including the ‘903 patent. The present action relates to the Cablevision Action under D. Del. LR 3.1(b) because it at least involves the same patent.

14. Rembrandt filed the Cablevision Action in this Court. In addition to asserting against Cablevision the patents at issue in the Texas Action, Rembrandt also asserts that Cablevision has infringed the ‘903 Patent by providing high speed internet service to its subscribers. A true and correct copy of the complaint is attached hereto as Exhibit E.

THE CABLE INDUSTRY

15. The cable industry in which CoxCom operates is highly competitive and involves a number of companies that offer the same sorts of services that CoxCom offers its subscribers. However, because of the expense of research and development of the equipment necessary to provide a robust, fully-functional cable system, standards have been developed that apply to various cable services, including the provision of high speed internet access.

16. Cable Television Laboratories, Inc. ("CableLabs") is a nonprofit research and development consortium that helps develop and integrate new cable telecommunications technologies. Exhibit F is a true and correct copy of excerpts from the CableLabs' website. CableLabs supported the development of cable modems via promulgation of a standard known as the Data Over Cable Service Interface Specification ("DOCSIS®") standards. CableLabs' DOCSIS® specification "defines interface requirements for cable modems involved in high speed data distribution over cable television system networks," including internet access. *Id.* Further information regarding CableLabs and DOCSIS® may be found on the CableLabs Web site at www.cablelabs.com. CableLabs and cable companies like CoxCom require interoperability among DOCSIS® cable modems and other equipment.

17. There are a limited number of vendors capable of supporting and providing cable modems and other equipment for building the architecture necessary to offer new cable services like high speed internet. Cable companies like CoxCom, Cablevision or Time Warner Cable, Inc. ("Time Warner"), often utilize the same vendors because the cable modems and other equipment offered by such vendors are DOCSIS®-compliant.

DECLARATORY JUDGMENT COUNT

**(NONINFRINGEMENT, INVALIDITY AND/OR UNENFORCEABILITY OF
THE '903 PATENT)**

18. CoxCom restates and realleges the allegations set forth in paragraphs 1 through 17 above and incorporates them by reference.

19. By virtue of Rembrandt's actions against CoxCom and its affiliates, as well as Rembrandt's initiation of lawsuits against Cablevision and Time Warner asserting provision of high speed internet services infringes the '903 Patent, CoxCom is under a real and immediate apprehension of a lawsuit by Rembrandt alleging infringement of the '903 Patent in view of CoxCom's business of providing high speed internet services.

20. Upon information and belief, CoxCom, however, has not directly infringed, contributed to the infringement of, or actively induced the infringement of any claim of the '903 Patent, nor has it otherwise committed any acts of infringement of any rights of Rembrandt.

21. Upon information and belief, the claims of the '903 Patent are invalid under 35 U.S.C. §§ 102, 103 and/or 112.

22. Upon information and belief, any attempt by Rembrandt to enforce the '903 Patent would be barred by waiver, laches, estoppel or acquiescence and, therefore, the '903 Patent is unenforceable.

PRAYER FOR RELIEF

WHEREFORE, CoxCom prays for the following:

1. A judgment and declaration that CoxCom has not infringed and does not infringe in any manner any claim of the '903 Patent, directly, contributorily or by inducement, and has not otherwise infringed or violated any rights of Rembrandt.

2. A judgment that each claim in the '903 Patent is invalid and unenforceable.

3. An injunction against Rembrandt and its affiliates, subsidiaries, assigns, employees, agents or anyone acting in privity or concert with Rembrandt from charging infringement or instituting any legal action for infringement of the '903 Patent against CoxCom or anyone acting in privity with CoxCom, including the divisions, successors, assigns, agents, suppliers, manufacturers, contractors and customers of CoxCom.

4. A judgment and declaration that this is an exceptional case within the meaning of 35 U.S.C. § 285, entitling CoxCom to an award of its reasonable attorneys' fees, expenses and costs in this action.

5. A judgment for such other and further relief in law or in equity as this Court deems just or proper.

MORRIS, NICHOLS, ARSHT & TUNNELL LLP

/s/ Rodger D. Smith II

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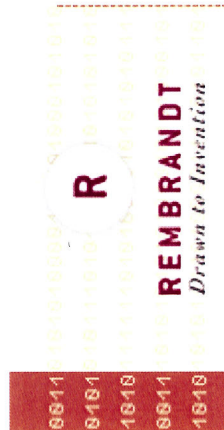
Attorneys for Plaintiff CoxCom, Inc.

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Dated: November 30, 2006

EXHIBIT A



➡ About

The Acquisition Process

The Rembrandt Story

Meet our People

FAQs

Famous Patent Infringement Cases

Working with Rembrandt

About

Rembrandt *Drawn to Invention*

Rembrandt delivers value for an inventor's invention. The company shoulders the legal, financial, and business risks associated with pursuing patent pirates and provides the capital and expertise required to litigate complex patent infringements.

Rembrandt acquires promising patents from inventors and innovative companies that can't defend their patents against infringement because of the cost of litigation or the threat of business or legal retaliation.

The firm's staff of in-house professionals and outside consultants includes scientists, inventors, financial analysts, lawyers, and researchers who are expert at identifying the validity and market value of patents and Intellectual Property (IP), and securing revenue for these inventors and companies as well as Rembrandt's investors.

Rembrandt invests its capital to acquire patents and pursue infringement. The company distinguishes itself through the quality of patents it acquires and the ability to pursue patent infringement, regardless of the size or sophistication of the infringer. The company has raised \$150 million to acquire patents and litigate patent infringement.

Rembrandt's financial resources, deep expertise, and commitment to innovation provide inventors and companies the ability to level the patent playing field and see value from their inspiration, ideas and IP.

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www.rembrandtfund.com/about.html

EXHIBIT B

UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

FILED-CLERK
DISTRICT COURT
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TX EASTERN-MARSHALL

REMBRANDT TECHNOLOGIES, LP

Plaintiff,

v.

CHARTER COMMUNICATIONS, INC.,
CHARTER COMMUNICATIONS
OPERATING, LLC, COX
COMMUNICATIONS, INC., COXCOM,
INC., COX ENTERPRISES, INC., CSC
HOLDINGS, INC., and CABLEVISION
SYSTEMS CORPORATION,

Defendants.

Case No. 2-06CV-223 LED

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

For its complaint plaintiff Rembrandt Technologies, LP ("Rembrandt"), by and through the undersigned attorneys, alleges as follows:

THE PARTIES

1. Plaintiff Rembrandt is a limited partnership organized under the laws of the state of New Jersey with its principal place of business at 401 City Avenue, Suite 815, Bala Cynwyd, PA 19004.

2. Defendant Charter Communications, Inc. is a corporation organized under the laws of the state of Delaware with its principal place of business at 12405 Powerscourt Dr., Ste. 100, St Louis, MO 63131.

3. Defendant Charter Communications Operating, LLC is a corporation organized under the laws of the state of Delaware with its principal place of business at 12405 Powerscourt Dr., Ste. 100, St. Louis, MO 63131.

4. Defendant Cox Communications, Inc. is a corporation organized under the laws of the state of Georgia with its principal place of business at 1400 Lake Hearn Dr., Atlanta, GA 30319.

5. Defendant Cox Enterprises, Inc. is a corporation organized under the laws of the state of Georgia with its principal place of business at 6205 Peachtree Dunwoody Road NE, Atlanta, GA 30328.

6. Defendant Coxcom, Inc. is a corporation organized under the laws of the state of Delaware with its principal place of business at 1400 Lake Hearn Dr., Atlanta, GA 30319.

7. Defendant CSC Holdings, Inc. is a corporation organized under the laws of the state of Delaware with its principal place of business at 1111 Stewart Ave., Bethpage, NY 11714.

8. Defendant Cablevision Systems Corporation is a corporation organized under the laws of the state of Delaware with its principal place of business at 1111 Stewart Ave., Bethpage, NY 11714.

JURISDICTION AND VENUE

9. This is an action for patent infringement, arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.*

10. Subject matter jurisdiction is proper in this Court under 28 U.S.C. §§ 1331 and 1338(a).

11. Because the Defendants have committed acts of patent infringement in this district, or are otherwise present or doing business in this district, this Court has personal jurisdiction over the Defendants.

12. Venue is proper in this judicial district under 28 U.S.C. §§ 1391(b), (c), and 1400(b).

COUNT I – INFRINGEMENT OF U.S. PATENT NO. 5,243,627

13. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-12 of this Complaint.

14. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,243,627, entitled “Signal Point Interleaving Technique” (“the ‘627 patent.”).

15. The ‘627 patent was duly and legally issued by the United States Patent and Trademark Office on September 7, 1993.

16. Defendants are operators of cable television systems throughout the United States.

17. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the ‘627 patent by practicing or causing others to practice (by inducement and contributorily) the inventions claimed in the ‘627 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the ‘627 patent

by their receipt and retransmission over their cable television systems of digital terrestrial broadcast signals that comply with the ATSC Digital Television Standard.

18. Upon information and belief, Defendants will continue to infringe the '627 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT II – INFRINGEMENT OF U.S. PATENT NO. 5,852,631

19. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-18 of this Complaint.

20. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,852,631, entitled "System and Method for Establishing Link Layer Parameters Based on Physical Layer Modulation" ("the '631 patent.")

21. The '631 patent was duly and legally issued by the United States Patent and Trademark Office on December 22, 1998.

22. Defendants are operators of cable systems and providers of Internet service throughout the United States.

23. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the '631 patent by practicing or causing others to practice (by inducement and contributorily) the inventions claimed in the '631 patent, in this district or otherwise within the

United States. For example, Defendants have infringed and continue to infringe the '631 patent by providing high speed internet service to subscribers.

24. Upon information and belief, Defendants will continue to infringe the '631 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT III – INFRINGEMENT OF U.S. PATENT NO. 5,719,858

25. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-24 of this Complaint.

26. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,719,858, entitled "Time-Division Multiple-Access Method for Packet Transmission on Shared Synchronous Serial Busses" ("the '858 patent.>").

27. The '858 patent was duly and legally issued by the United States Patent and Trademark Office on February 17, 1998.

28. Defendants are operators of cable systems and providers of Internet service throughout the United States.

29. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the '858 patent by practicing or causing others to practice (by inducement and contributorily) the inventions claimed in the '858 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the '858 patent

by their provision of high speed internet services, including such services as Voice over IP (VoIP), to subscribers.

30. Upon information and belief, Defendants will continue to infringe the '858 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT IV – INFRINGEMENT OF U.S. PATENT NO. 4,937,819

31. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-30 of this Complaint.

32. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 4,937,819, entitled "Time Orthogonal Multiple Virtual DCE for Use in Analog and Digital Networks" ("the '819 patent").

33. The '819 patent was duly and legally issued by the United States Patent and Trademark Office on June 26, 1990.

34. Defendants are operators of cable systems and providers of Internet service throughout the United States.

35. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the '819 patent by practicing or causing others to practice (by inducement and contributorily) the inventions claimed in the '819 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the '819 patent

by their provision of high speed internet services, such as Voice over IP (VoIP) services, to cable television subscribers.

36. Upon information and belief, Defendants will continue to infringe the '819 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

PRAYER FOR RELIEF

WHEREFORE, Rembrandt prays that it have judgment against Defendants for the following:

- (1) A decree that the Defendants have infringed the patents-in-suit;
- (2) A permanent injunction enjoining and restraining each Defendant and its agents, servants, employees, affiliates, divisions, and subsidiaries, and those in association with them, from making, using, offering to sell, selling, and importing into the United States any product, or using, offering to sell, or selling any service, which falls within the scope of any claim of the patents-in-suit;
- (3) An award of damages;
- (4) An award of increased damages pursuant to 35 U.S.C. § 284;
- (5) An award of all costs of this action, including attorneys' fees and interest; and
- (6) Such other and further relief, at law or in equity, to which Rembrandt is justly entitled.

JURY DEMAND

Rembrandt hereby demands a jury trial on all issues appropriately triable by a jury.

Dated: June 1, 2006

Respectfully submitted,

By: Robert M. Parker by per. Mark G. S.

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EXHIBIT C

IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
MARSHALL DIVISION

FILED-CLERK
U.S. DISTRICT COURT
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TX EASTERN-MARSHALL

REMBRANDT TECHNOLOGIES, LP)
)
Plaintiff,)
)
v.)
)
TIME WARNER CABLE INC.,)
)
Defendant.)
_____)

BY _____
Case No 2-06CV-369
JURY TRIAL REQUESTED *TJW*

COMPLAINT

Plaintiff Rembrandt Technologies, LP ("Rembrandt") files this complaint for infringement of United States Patent Nos. 5,008,903; 5,710,761; 5,778,234; 6,131,159 and 6,950,444 under 35 U.S.C. § 271, and in support thereof would respectfully show the Court the following:

THE PARTIES

1. Plaintiff Rembrandt is a limited partnership organized under the laws of the state of New Jersey with its principal place of business at 401 City Avenue, Suite 815, Bala Cynwyd, PA 19004 and offices at 214 W Fanin, Marshall, TX 75670.

2. Defendant Time Warner Cable Inc. ("IWC") is a corporation organized under the laws of the state of Delaware with its principal place of business at 7910 Crescent Executive Drive, Suite 56, Charlotte, North Carolina 28217. IWC's registered agent for service of process in Texas is CT Corporation System, 350 North St. Paul Street, Dallas, Texas 75201. IWC is a national provider of cable television and internet products and services, and regularly conducts and transacts business in Texas and within this judicial district itself (both as Time Warner Cable and/or Road Runner).

JURISDICTION AND VENUE

3 This is an action for patent infringement, arising under the patent laws of the United States, 35 U.S.C. § 1, et seq. This Court has exclusive subject matter jurisdiction over this action under 28 U.S.C. §§1331 and 1338(a).

4 This Court has personal jurisdiction over Defendant TWC. TWC has conducted and does conduct business with the State of Texas. TWC, directly or through subsidiaries or intermediaries, offers for sale, sells, advertises, and markets products and services that infringe the patents-in-suit as described more specifically below. Therefore, because TWC has committed acts of patent infringement in this district, or is otherwise present or doing business in this district, this Court has personal jurisdiction over TWC.

5 Venue is proper in this judicial district under 28 U.S.C. §§1391(b), (c), and 1400(b).

COUNT I: INFRINGEMENT OF U.S. PATENT NO. 5,008,903

6 Rembrandt refers to and incorporates herein the allegations of Paragraphs 1-5 above.

7 Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,008,903, entitled “Adaptive Transmit Pre-Emphasis for Digital Modem Computed from Noise Spectrum” (“the ‘903 patent”). A true copy of the ‘903 patent is attached as Exhibit A.

8 The ‘903 patent was duly and legally issued by the United States Patent and Trademark Office on April 16, 1991, after full and fair examination.

9 Defendant has directly or indirectly infringed, and is continuing to directly or indirectly infringe, the ‘903 patent by practicing or causing others to practice, by inducement and

contributorily, the inventions claimed in the '903 patent, in this district or otherwise within the United States. For example, Defendant has infringed and continues to infringe the '903 patent by providing high-speed cable modem internet products and services to subscribers.

10. Upon information and belief, Defendant will continue to infringe the '903 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT II: INFRINGEMENT OF U.S. PATENT NO. 5,710,761

11. Rembrandt refers to and incorporates herein the allegations of Paragraphs 1-5 above.

12. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,710,761, entitled "Error Control Negotiation Based on Modulation" ("the '761 patent"). A true copy of the '761 patent is attached as Exhibit B.

13. The '761 patent was duly and legally issued by the United States Patent and Trademark Office on January 20, 1998, after full and fair examination.

14. Defendant has directly or indirectly infringed, and is continuing to directly or indirectly infringe, the '761 patent by practicing or causing others to practice, by inducement and contributorily, the inventions claimed in the '761 patent, in this district or otherwise within the United States. For example, Defendant has infringed and continues to infringe the '761 patent by providing high-speed cable modem internet products and services to subscribers.

15. Upon information and belief, Defendant will continue to infringe the '761 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will

continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT III: INFRINGEMENT OF U.S. PATENT NO. 5,778,234

16. Rembrandt refers to and incorporates herein the allegations of Paragraphs 1-5 above.

17. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,778,234, entitled "Method for Downloading Programs" ("the '234 patent."). A true copy of the '234 patent is attached as Exhibit C.

18. The '234 patent was duly and legally issued by the United States Patent and Trademark Office on July 7, 1998, after full and fair examination.

19. Defendant has directly or indirectly infringed, and is continuing to directly or indirectly infringe, the '234 patent by practicing or causing others to practice, by inducement and contributorily, the inventions claimed in the '234 patent, in this district or otherwise within the United States. For example, Defendant has infringed and continues to infringe the '234 patent by providing high-speed cable modem internet products and services to subscribers.

20. Upon information and belief, Defendant will continue to infringe the '234 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT IV: INFRINGEMENT OF U.S. PATENT NO. 6,131,159

21. Rembrandt refers to and incorporates herein the allegations of Paragraphs 1-5 above.

22. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 6,131,159, entitled "System for Downloading Programs" ("the '159 patent."). A true copy of the '159 patent is attached as Exhibit D.

23. The '159 patent was duly and legally issued by the United States Patent and Trademark Office on October 10, 2000, after full and fair examination.

24. Defendant has directly or indirectly infringed, and is continuing to directly or indirectly infringe, the '159 patent by practicing or causing others to practice, by inducement and contributorily, the inventions claimed in the '159 patent, in this district or otherwise within the United States. For example, Defendant has infringed and continues to infringe the '159 patent by providing high-speed cable modem internet products and services to subscribers.

25. Upon information and belief, Defendant will continue to infringe the '159 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT V: INFRINGEMENT OF U.S. PATENT NO. 6,950,444

26. Rembrandt refers to and incorporates herein the allegations of Paragraphs 1-5 above.

27. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 6,950,444, entitled "System and Method for a Robust Preamble and Transmission Delimiting in a Switched-Carrier Transceiver" ("the '444 patent") A true copy of the '444 patent is attached as Exhibit E.

28. The '444 patent was duly and legally issued by the United States Patent and Trademark Office on September 27, 2005, after full and fair examination.

29. Defendant has directly or indirectly infringed, and is continuing to directly or indirectly infringe, the '444 patent by practicing or causing others to practice, by inducement and contributorily, the inventions claimed in the '444 patent, in this district or otherwise within the United States. For example, Defendant has infringed and continues to infringe the '444 patent by providing high-speed cable modem internet products and services to subscribers.

30. Upon information and belief, Defendant will continue to infringe the '444 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

PRAYER FOR RELIEF

WHEREFORE, Rembrandt prays that it have judgment against Defendant TWC for the following:

- (1) An order that TWC has infringed the patents-in-suit;
- (2) A permanent injunction enjoining and restraining TWC and its agents, servants, employees, affiliates, divisions, and subsidiaries, and those in association therewith, from making, using, offering to sell, selling, and importing into the United States any product, or using, offering to sell, or selling any service, which falls within the scope of any claim of the patents-in-suit;
- (3) An award of damages;
- (4) An award of increased damages pursuant to 35 U.S.C. § 284;
- (5) An award of all costs of this action, including attorneys' fees and interest; and

(6) Such other and further relief, at law or in equity, to which Rembrandt is justly entitled

JURY DEMAND

Rembrandt hereby demands a jury trial on all issues appropriately triable by a jury.

Dated: September 13, 2006.

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EXHIBIT D

United States Patent [19]

Betts et al.

[11] Patent Number: 5,008,903

[45] Date of Patent: Apr. 16, 1991

- [54] ADAPTIVE TRANSMIT PRE-EMPHASIS
FOR DIGITAL MODEM COMPUTED FROM
NOISE SPECTRUM

- [75] Inventors: William L. Betts, St. Petersburg;
James J. DesRosiers, Tampa, both of
Fla.

- [73] Assignee: **A.T. & T. Paradyne, Largo, Fla.**

- [21] Appl. No.: 357,056

- [22] Filed: May 25, 1989

- [51] Int. Cl.⁵ H04L 7/00

- [52] U.S. Cl. 375/60; 375/14

- [58] **Field of Search** 375/7, 8, 12, 13, 14,
375/15, 60, 109; 333/18, 28 R; 364/724;
371/64, 34; 455/24

- [56]
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Primary Examiner—Douglas W. Olms

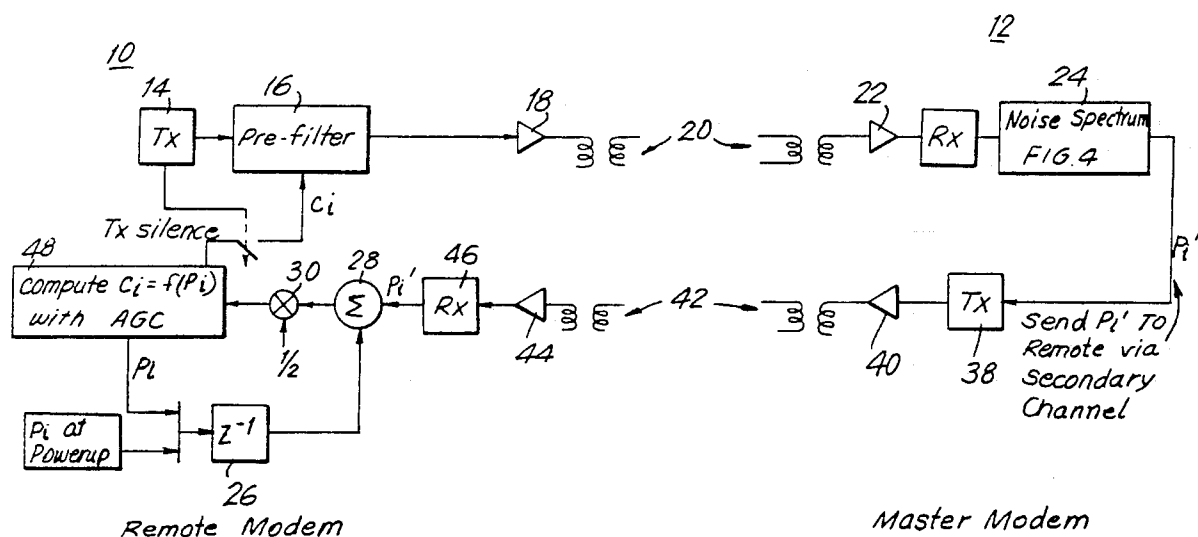
Assistant Examiner—Stephen Chin

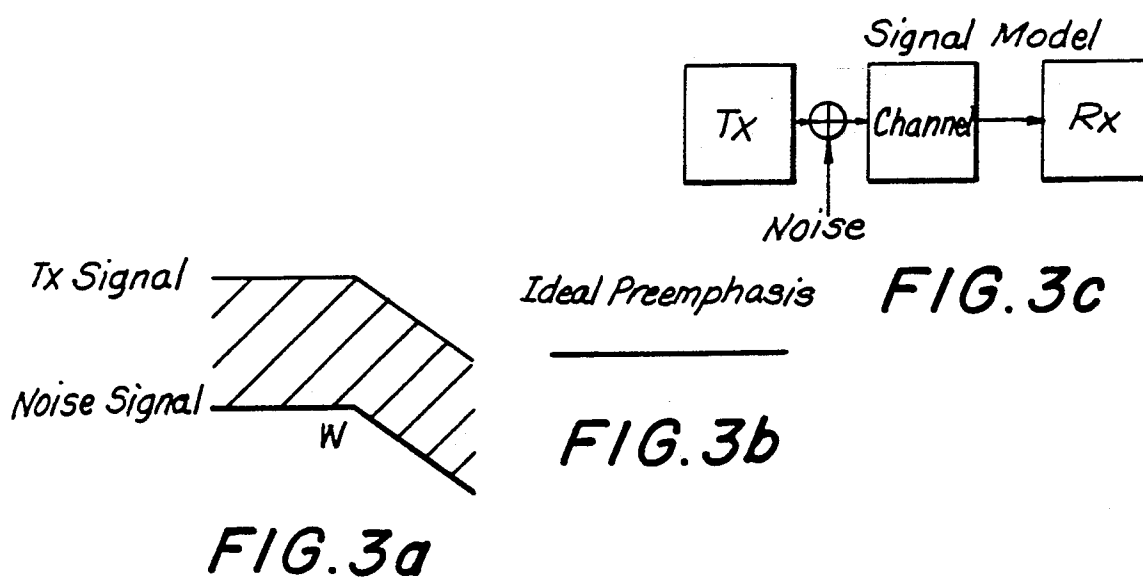
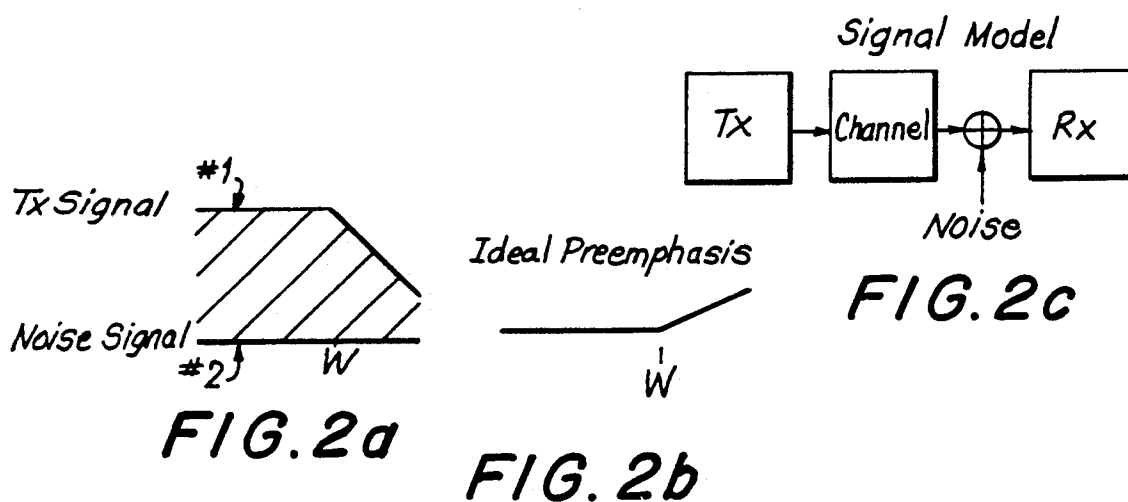
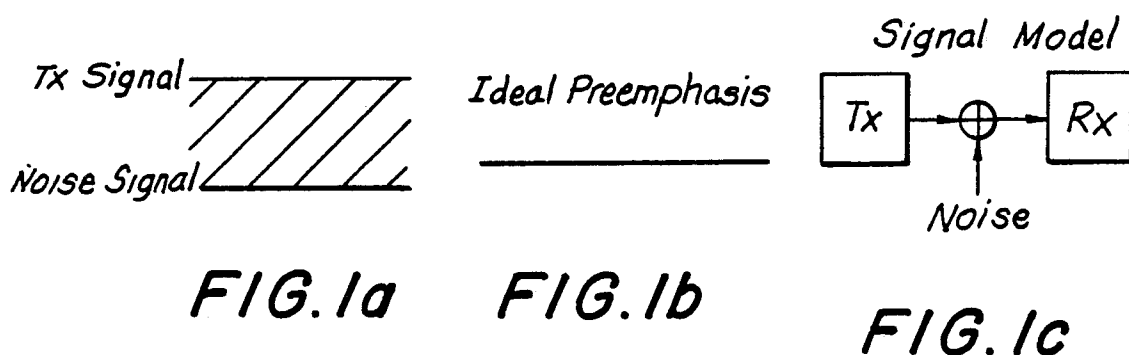
Attorney, Agent, or Firm—Kane, Dalsimer, Sullivan,
Kurucz, Levy, Eisele & Richard

[57] **ABSTRACT**

An apparatus and method calculates pre-emphasis coefficients for a transmitting modem based upon the noise spectrum as it is received at the receiving modem. A noise spectrum analysis circuit calculates a difference between the best-fit transmitted data and the actually received data. This difference is used to compute a discrete Fourier transform of the noise spectrum, which is transmitted back to the transmitting modem on the secondary channel. This data is used to calculate filter coefficients for the transmitting modem.

21 Claims, 4 Drawing Sheets





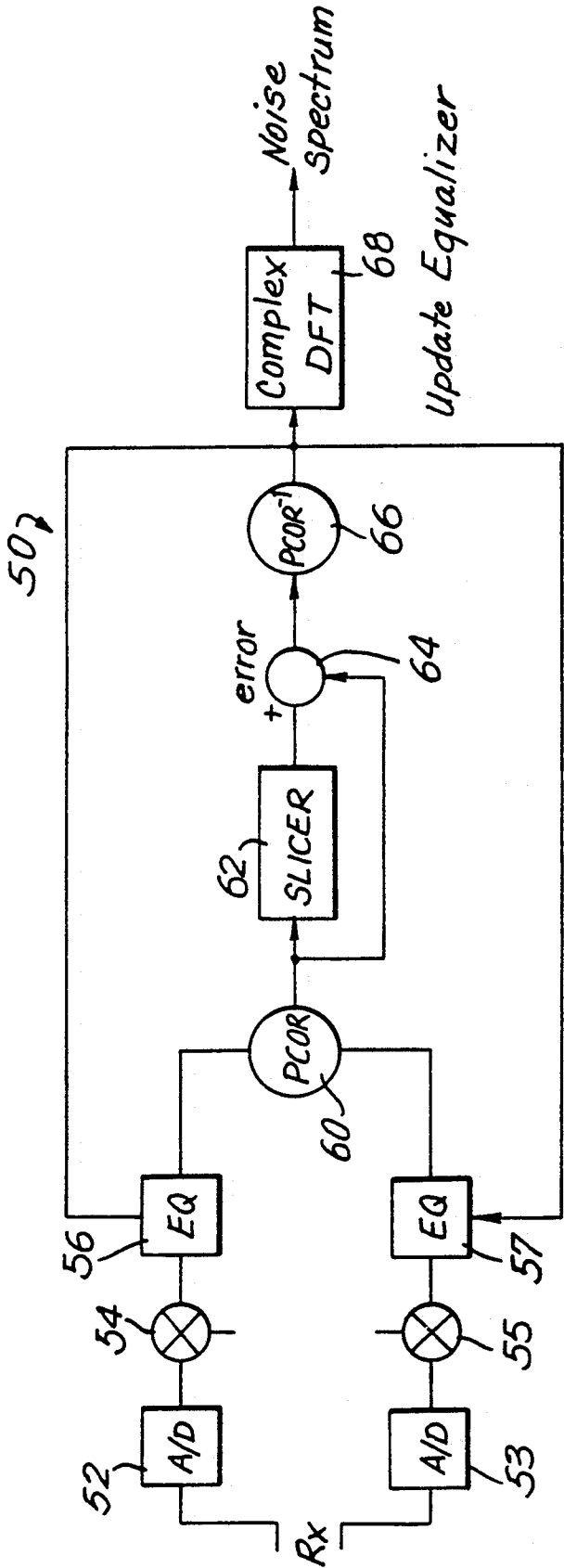
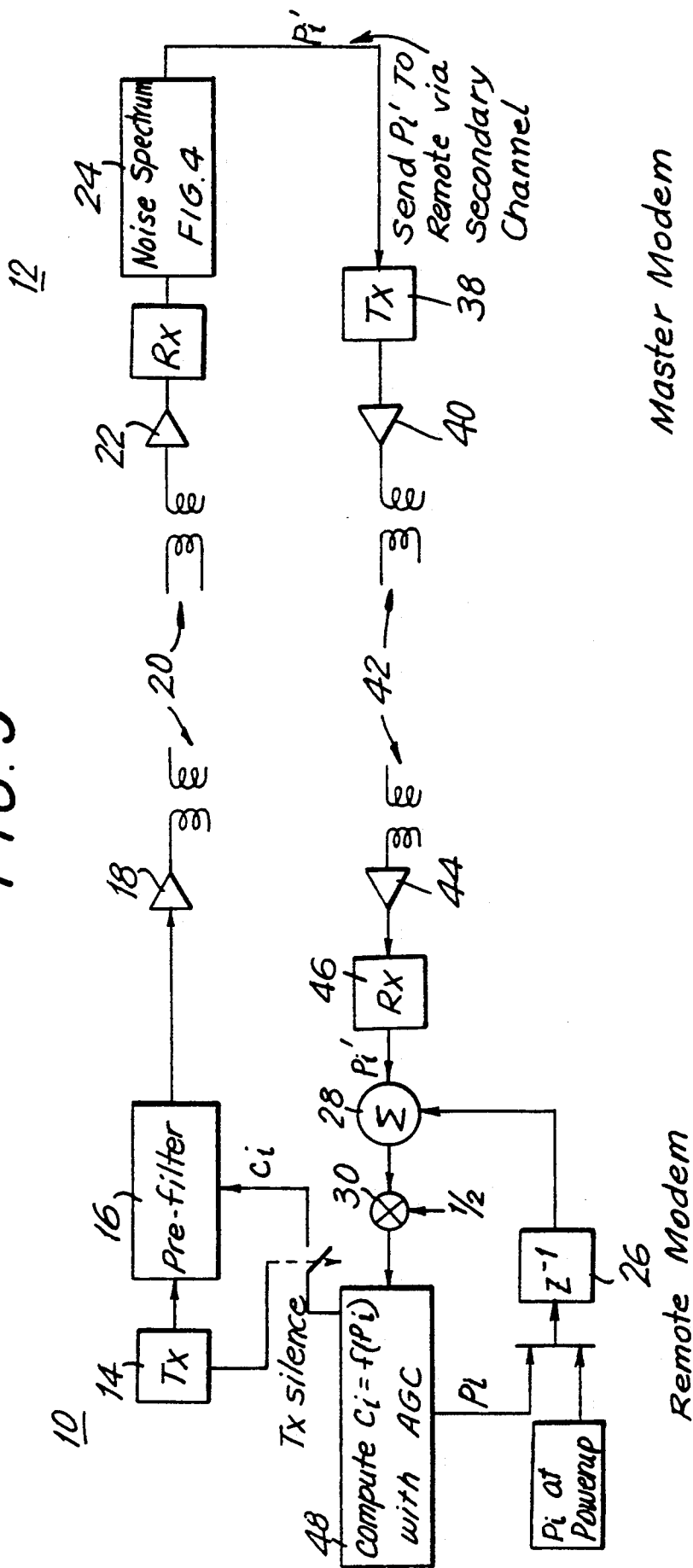


FIG. 4

FIG. 5



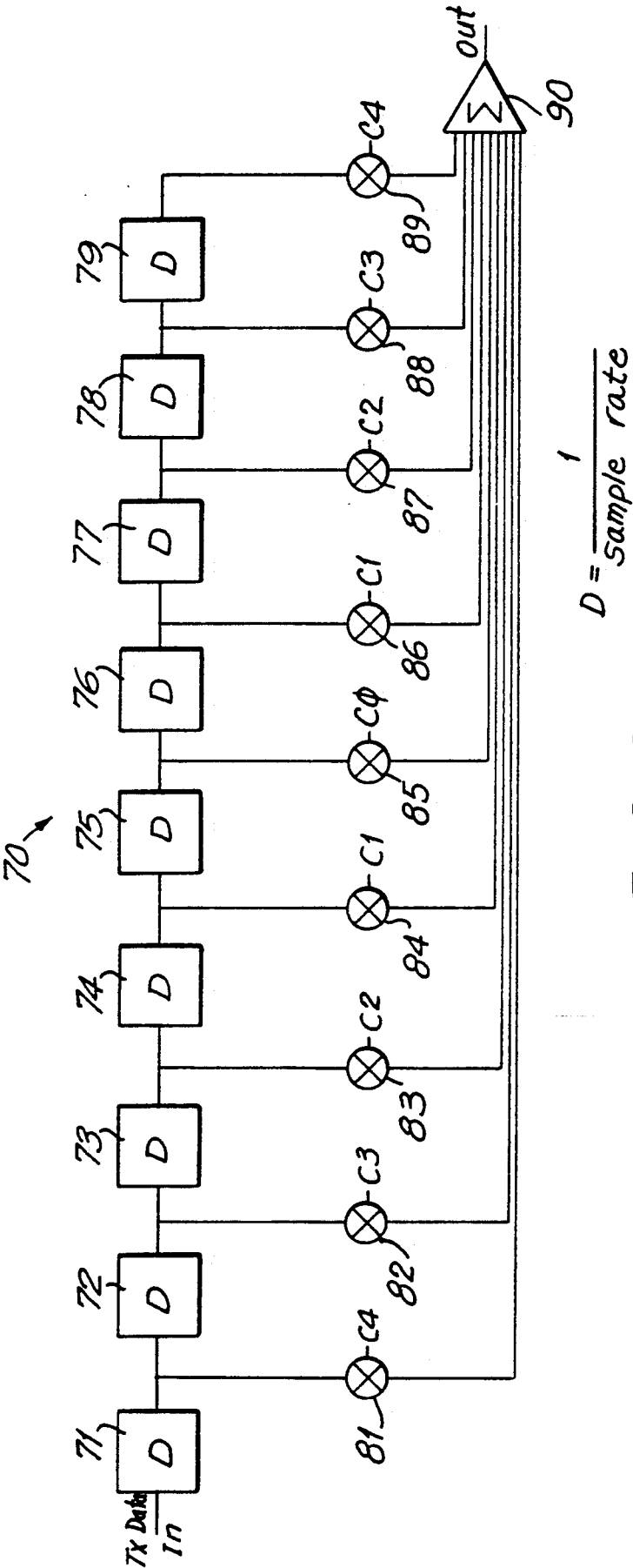


FIG. 6

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ADAPTIVE TRANSMIT PRE-EMPHASIS FOR DIGITAL MODEM COMPUTED FROM NOISE SPECTRUM

BACKGROUND OF INVENTION

1. Field of Invention

This invention relates to an apparatus for determining a frequency-dependent signal-to-noise ratio in a communications network so as to allow proper equalization in a transmit pre-emphasis mode.

2. Description of the Prior Art

It is well-known in the prior art that a transmitter in a communications network, particularly a multipoint network, should emphasize or amplify certain frequencies so as to compensate for frequency-dependent losses in the communications process. For example, with the use of a telephone line as a communications line, losses are more pronounced at higher frequencies. These losses are typically modelled as a constant negative slope above a given break frequency on a decibels versus frequency plot.

When noise is injected into a communications line subsequent to the high-frequency roll-off of the communications line and the signal rolls off above a break frequency while the noise signal remains constant (thereby resulting in a signal-to-noise ratio which progressively decreases above the break frequency), prior art methods of frequency-dependent analysis of total energy received is adequate as an equalization technique. These methods include fixed pre-emphasis wherein a fixed frequency-dependent boost is included in the communication apparatus, or adaptive pre-emphasis wherein the required frequency-dependent boost is calculated on-line during a periodic training sequence.

However, when noise is injected into a communications line prior to the high frequency roll-off of the communications line and the noise rolls off in parallel to the roll-off of the signals (resulting in a constant signal-to-noise ratio as a function of frequency), prior art methods of frequency-dependent analysis of total energy received are inadequate as an equalization technique.

This inadequacy is due to the fact that a positive gain is applied to higher frequency portions of the total signal. However, in order to keep the total signal energy constant as is required by telephone and other communications line applications, this positive gain in the upper frequency spectrum must be compensated for by a negative gain in the lower frequency spectrum thereby reducing the signal-to-noise ratio in the lower frequencies and resulting in a degradation in performance. This principle is illustrated in more detail by the several drawings of FIGS. 1, 2 and 3.

FIG. 1a illustrates the received transmitter signal and the received noise signal being "flat" across the entire band. The signal model for this spectrum is shown in FIG. 1b wherein the communications line includes no roll-off or other frequency-dependent characteristics and noise is added between the transmitter and the receiver. Such a system requires no frequency-dependent pre-emphasis as is shown by the ideal flat pre-emphasis of FIG. 1c.

FIG. 2a illustrates the received transmitter signal rolling off above a break frequency w_0 while the received noise spectrum is "flat" across the entire band. The signal included for this spectrum is shown in FIG.

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2b wherein the transmitter signal passes through a channel or communications line thereby being rolled-off before having frequency-independent noise added thereto. The ideal pre-emphasis, whether manually set or periodically calculated on-line, is illustrated in FIG. 2c wherein an increasing gain is applied above the frequency w_0 . This frequency-dependent pre-emphasis flattens the transmitter signal as received without affecting the noise signal, thereby increasing the signal-to-noise ratio at the frequencies above w_0 and improving overall system performance. A slight negative gain may be applied in the lower frequencies so as to keep the total incoming energy constant. This ideal pre-emphasis is accurately calculated by prior art methods.

FIG. 3a illustrates the received transmitter signal and the received noise both rolling off in parallel above break frequency w_0 . The signal model for this spectrum is shown in FIG. 3c wherein the noise is added to the transmitter signal at the transmitter end and both the transmitter signal and the noise are passed through the channels or communication line thereby having substantially identical attenuation characteristics applied thereto. Therefore, the signal-to-noise ratio remains constant throughout the entire band as is illustrated by the constant vertical distance between the received transmitter signal and the noise. As the signal-to-noise ratio is constant, the ideal signal pre-emphasis is flat or shown in FIG. 3c (or 1c). However, prior art methods of pre-emphasis, either manual or automated, would look to the frequency-dependent energy spectrum of the entire received signal (received transmitter signal plus received noise) and calculate a pre-emphasis similar to that shown in FIG. 2c. This would result in a lowering of the transmitter signal power and the signal-to-noise ratio at frequencies below break frequency w_0 and an overall degradation in system performance.

OBJECTS AND SUMMARY OF THE INVENTION

It is therefore the object of this invention to provide a method and apparatus for automated transmit pre-emphasis calculation which properly accounts for frequency-dependent signal-to-noise ratios.

This apparatus and method uses a noise spectrum generator circuit to calculate a frequency-dependent noise spectrum. This spectrum is transmitted from the receiver to the transmitter (or from the master to the remote in a multipoint system) via the secondary channel. The transmitter uses this information to compute the new pre-emphasis coefficients from its own transmitted spectrum as seen by the receiver and uses the result on its subsequent transmission.

Thus, this and other objects are effectively achieved.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1a, 1b and 1c are illustrative of a communications system with no frequency-dependent attenuation or roll-off.

FIGS. 2a, 2b and 2c are illustrative of a communications system with noise injected subsequent to frequency-dependent attenuation or roll-off.

FIGS. 3a, 3b and 3c are illustrative of a communications system with noise injected prior to frequency-dependent attenuation or roll-off.

FIG. 4 is a schematic of the noise spectrum generator circuit of the present invention.

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FIG. 5 is a schematic of the transmitter and receiver of the present invention.

FIG. 6 is a schematic of the nine-tap filter of the pre-filter of FIG. 5.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings in detail wherein like numerals indicate like elements throughout the several views, noise spectrum generator circuit 50 is illustrated in FIG. 4. As will be described herein, noise spectrum generator circuit 50 is incorporated into the circuitry of the modem receiver circuit 12 of FIG. 5.

Noise spectrum generator circuit 50 includes analog-to-digital converters 52, 53 and sinusoidal mixers 54, 55 for demodulation. The demodulated signal from mixers 54, 55 is equalized by linear equalizers 56, 57. Linear equalizers 56, 57 are transversal filters which are from the prior art and are not to be confused with the equalization used for pre-emphasis in the transmitter circuitry. The resulting signals are phase corrected by phase corrector 60 which results in an x-y signal representative of the complex plane to slicer 62. Slicer 62 includes the constellation or eye pattern data which is used in the quadrature amplitude modulation scheme of the signal received by analog-to-digital converters 52, 53. Slicer 62 outputs the constellation point which is closest to the input of slicer 62. Therefore, the actual received point is input to slicer 62 and the presumed actual transmitted point is output from slicer 62. Comparator 64 subtracts the actual received point from the actual transmitted point so as to calculate an error signal which is representative of the noise signal at the given frequency. This error or noise signal is inversely related to the distance between the signal line and the noise line of FIGS. 1a, 2a and 3a at the given frequency.

The resulting error signal is phase corrected by inverse phase corrector 66. The output of inverse phase corrector 66 is used to update the characteristics of linear equalizers 56, 57 and as an input to complex DFT (discrete Fourier transform) block 68. Complex DFT block 68 converts the phase corrected noise signals in the time domain (i.e. successive values corresponding to successive frequencies) into the noise spectrum in the frequency domain.

FIG. 5 discloses the entire modem transmitter circuit 10 and modem receiver circuit 12 of the present invention. Modem transmitter circuit 10 includes a conventional modem transmitter 14 which outputs digital signals to be transmitted to pre-filter 16. Pre-filter 16 pre-emphasizes the digital signals prior to their conversion to analog signals. Pre-filter 16, as will be described herein, includes nine-tap filter 70 as shown in FIG. 7. The output of the pre-filter 16 is converted to analog format by digital-to-analog converter 18 for transmission across communications line 20, which may be a telephone line, to modem receiver circuit 12.

Analog-to-digital converter 22 (which corresponds to analog-to-digital converters 42, 43 of FIG. 4) converts the analog signal from communications line 20 into digital format for input into noise spectrum analysis block 24. The remainder of the noise spectrum generator circuit of FIG. 4 is included in noise spectrum analysis block 24 from which a frequency domain plot of the noise signal (P_i , $i=1,5$) is output, said frequency domain plot being derived by discrete Fourier transform techniques as previously described.

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Secondary channel transmitter 38 transmits communications network control parameters, including the spectrum (P_i , $i=1,5$) from block 24, on a sideband of the primary channel at a low transmission rate through line 42 via digital-to-analog converter 40 to analog-to-digital converter 44 of modem transmitter circuitry 10.

Modem transmitter circuitry 10 includes analog-to-digital converter 44 and secondary channel receiver 46 which receives the spectrum sent from secondary channel transmitter 38 through line 42. Secondary channel receiver 46 transmits the spectrum (P'_i , $i=1,5$) data to comparator 28. In order to account for existing pre-emphasis, the frequency domain plot of the noise signal has subtracted from it the previous frequency domain plot as stored in shift register 26. This subtraction is performed by comparator 28. The reference spectrum outputs from comparator 28 is multiplied by one half by multiplier 30. This division is done as the current state-of-the-art is to have the transmitter provide by pre-emphasis one half of the signal compensation required while the receiver provides the other half. The portion provided by the receiver of, course, is done by apparatus separate from the invention as herein described. This division by two is optional and not crucial to the invention. The reference spectrum may be divided by other values, or not divided at all, in other embodiments of the invention.

Shift register 26 includes a power-up line which initializes the contents of shift register 26 with values representative of a flat spectrum as stored in block 29.

The output of multiplier 30 is input to compute block 48 which calculates and transmits the pre-filter coefficients (C_i , $i=0,4$) for pre-filter 16 as will be described hereinafter.

Pre-filter 16 includes nine-tap filter 70 as shown in FIG. 6. Nine-tap filter 70 receives its input from the output from modem transmitter 14. The input is transmitted through a series of 9 delay blocks 71-79, the outputs of each of these delay blocks is sent through multipliers 81-89. Multipliers 81-89 receive their second multiplicands (C_0-C_4) from compute block 48 and send their respective products to adder 90. The output of adder 90 is the output of pre-filter 16.

Compute block 48 includes a power-up line which initializes the pre-filter coefficients (C_i , $i=0,4$) for a flat spectrum for the first transmission of the transmitting circuit 10. Subsequent initialization could be provided by the previously calculated C_i , $i=0,4$ stored in non-volatile memory.

The functional description of this invention is as follows.

The transmitting modem 10 sends QAM modulated data signals to the receiving modem 12.

The noise spectrum generator circuit 50, including the complex DFT block 68, calculates a frequency spectrum (P_i , $i=1,5$) of the noise at 5 frequencies—709, 1145, 1800, 2455 and 2891 Hertz. These frequencies are chosen from a 22 point discrete Fourier transform calculation so as to span the usable frequency of a telephone line. The spectrum is transmitted back to the transmitting modem 10 over the secondary channel. The previous frequency spectrum is subtracted from the new frequency spectrum, and the result is divided in half. This result is stored as the "previous value" for the next calculation.

The frequency spectrum (P_i , $i=1,4$) of the noise expressed in a logarithm scale are converted to a linear scale (F_i , $i=0,4$) in compute block 48.

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The linear scale frequency spectrum is converted to filter coefficients through the following transformation:

$$\begin{aligned}C_0 &= (F_0 - 2F_1 + 2F_2 - 2F_3 + F_4)/8 \\C_1 &= (F_0 - 2F_1 + 2F_3 - F_4)/8 \\C_2 &= (F_0 - 2F_2 + F_4)/8 \\C_3 &= (F_0 + 2F_1 + 2F_3 - F_4)/8 \\C_4 &= (F_0 + 2F_1 + 2F_2 + 2F_3 + F_4)/8\end{aligned}$$

C_i , $i=0,4$, is then transformed by computer block 48 into C'_i , $i=0,4$ in order to adjust the pre-emphasis coefficients to be appropriate for the resonators of the resonating filters. These resonators are located at 0, 600, 1200 and 2400 Hertz. An iterative calculation is done to adjust the pre-emphasis coefficients, C'_i , $i=0,4$ (i.e. scalars) into appropriate filter coefficients, C_i , $i=0,4$.

Finally, these filter coefficients, C_i , $i=0,4$, are adjusted via an AGC circuit in compute block 48, so as to assure a constant power output from transmitting modem 10.

These appropriate filter coefficients C_i , $i=0,4$ are transmitted to pre-filter 16. However, pre-filter 16 implements these coefficients only whenever data is not being transmitted through pre-filter 16, such as just before a remote modem responds to a poll. This implementation precludes changing the transmission characteristics in the middle of a transmission.

Obviously, many modifications and variations of the invention are possible in light of the above description. It is therefore to be understood that within the scope of the appended claims, the invention may be practiced other than as specifically described.

What is claimed is:

1. An apparatus for calculating pre-emphasis coefficients for a transmitting modem in a communications system, including:

first transmitting means in the transmitting modem, including adjusting means responsive to the pre-emphasis coefficients for adjusting frequency-dependent characteristics of an output of said first transmitting means;

receiving means for receiving said output from said first transmitting means;

generating means for generating parameters responsive to a noise spectrum of said output including means for calculating said noise spectrum of said output;

second transmitting means for transmitting said parameters to the transmitting modem, and computing means for computing the pre-emphasis coefficients from said parameters.

2. The apparatus of claim 1 wherein said adjusting means includes a filter with several taps.

3. The apparatus of claim 2 wherein said filter includes at least nine taps.

4. The apparatus of claim 1 wherein said generating means includes a noise spectrum generator circuit.

5. The apparatus of claim 4 wherein said noise spectrum generator circuit includes:

determining means for determining best-fit transmitted data points from said output of said first transmitting means as received by said receiving means; comparing means for determining a difference between said best-fit transmitted data points and said output as received by said receiving means thereby calculating said noise spectrum of said output.

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6. An apparatus for calculating pre-emphasis coefficients for a transmitting modem in a communications systems, including:

first transmitting means in the transmitting modem, including adjusting means responsive to the pre-emphasis coefficients for adjusting frequency-dependent characteristics of an output of said first transmitting means;

receiving means for receiving said output from said first transmitting means;

generating means, including a noise spectrum generator circuit, for generating parameters responsive to a noise spectrum of said output;

second transmitting means for transmitting said parameters to the transmitting modem; and

computing means for computing the pre-emphasis coefficients from said parameters;

wherein said noise spectrum generator circuit includes determining means for determining best-fit transmitted data points from said output of said first transmitting means as received by said receiving means; and comparing means for determining a difference between said best-fit transmitted data points and said output as received by said receiving means;

wherein said receiving means includes analog-to-digital conversion means and demodulating means which generates a complex signal; and wherein said noise spectrum generator circuit includes a phase corrector responsive to said complex signal; a slicer which determines, from said complex signal, best-fit transmitted data points from said first transmitted means; subtracting means for determining a difference between said best-fit transmitted data points and said complex signal; an inverse phase corrector responsive to said difference; and a complex discrete Fourier transform block responsive to said inverse phase corrector.

7. The apparatus of claim 6 wherein said phase corrector is responsive to equalization means and wherein said equalization means is responsive to said inverse phase corrector.

8. An apparatus for calculating pre-emphasis coefficients for a transmitting modem in a communications systems, including:

first transmitting means in the transmitting modem, including adjusting means responsive to the pre-emphasis coefficients for adjusting frequency-dependent characteristics of an output of said first transmitting means;

receiving means for receiving said output from said first transmitting means;

generating means, including a noise spectrum generator circuit, for generating parameters responsive to a noise spectrum of said output;

second transmitting means for transmitting said parameters to the transmitting modem; and

computing means for computing the pre-emphasis coefficients from said parameters;

wherein said noise spectrum generator circuit includes determining means for determining best-fit transmitted data points from said output of said first transmitting means as received by said receiving means; and comparing means for determining a difference between said best-fit transmitted data points and said output as received by said receiving means; and

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wherein said determining means includes eye pattern data.

9. An apparatus for calculating pre-emphasis coefficients for a transmitting modem in a communications systems, including:

first transmitting means in the transmitting modem, including adjusting means responsive to the pre-emphasis coefficients for adjusting frequency-dependent characteristics of an output of said first transmitting means;

receiving means for receiving said output from said first transmitting means;

generating means, including a noise spectrum generator circuit, for generating parameters responsive to a noise spectrum of said output;

second transmitting means for transmitting said parameters to the transmitting modem; and

computing means for computing the pre-emphasis coefficients from said parameters;

wherein said noise spectrum generator circuit includes determining means for determining best-fit transmitted data points from said output of said first transmitting means as received by said receiving means; and comparing means for determining a difference between said best-fit transmitted data points and said output as received by said receiving means; and

wherein said generating means includes discrete Fourier transform means responsive to said difference, thereby calculating a frequency domain representation of said noise spectrum of said output.

10. The apparatus of claim 8 wherein said generating means further includes discrete Fourier transform means responsive to said difference, thereby calculating a frequency domain representation and storing the values of the frequency domain representation of a noise spectrum of said output.

11. The apparatus of claim 10, wherein said computing means includes subtracting means for subtracting previously stored values from said frequency domain representation thereby calculating second differences.

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12. The apparatus of claim 11 wherein said computing means further includes dividing means for dividing said second differences.

13. The apparatus of claim 12 wherein said dividing means divides by two.

14. The apparatus of claim 11 wherein said second differences replace said previously stored values.

15. The apparatus of claim 1 wherein said second transmitting means transmits over a secondary channel.

16. The apparatus of claim 15 wherein said secondary channel is a sideband of a channel of said first transmitting means.

17. The apparatus of claim 16 wherein said receiving means and said second transmitting means are incorporated into a single circuit.

18. The apparatus of claim 1 wherein said computing means converts said parameters from logarithmic to linear scale.

19. The apparatus of claim 1 wherein said computing means adjusts said parameters iteratively to adjust for resonator frequencies of said first transmitting means.

20. The apparatus of claim 1 wherein said computing means adjusts said parameters to assure a constant power output of said first transmitting means.

21. A method for calculating pre-emphasis coefficients for a transmitting modem in a communications systems, including the steps of:

transmitting from the transmitting modem; adjusting frequency characteristics of output from said transmitting step responsive to the pre-emphasis coefficients;

receiving said output from said first transmitting means;

calculating a noise spectrum of said output; generating parameters responsive to said noise spectrum of said output;

sending said parameters to the transmitting modem; and

computing the pre-emphasis coefficients from said parameters.

* * * * *

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EXHIBIT E

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

REMBRANDT TECHNOLOGIES, LP

Plaintiff,

v.

CABLEVISION SYSTEMS CORPORATION,
and CSC HOLDINGS, INC.

Defendants.

Case No. _____

JURY TRIAL DEMANDED

COMPLAINT FOR PATENT INFRINGEMENT

For its complaint plaintiff Rembrandt Technologies, LP (“Rembrandt”), by and through the undersigned attorneys, alleges as follows:

THE PARTIES

1. Plaintiff Rembrandt is a limited partnership organized under the laws of the state of New Jersey with its principal place of business at 401 City Avenue, Suite 815, Bala Cynwyd, PA 19004.

2. Defendant Cablevision Systems Corporation is a corporation organized under the laws of the State of Delaware with its principal place of business at 1111 Stewart Avenue, Bethpage, NY 11714.

3. Defendant CSC Holdings, Inc. is a corporation organized under the laws of the State of Delaware with its principal place of business at 1111 Stewart Avenue, Bethpage, NY 11714

JURISDICTION AND VENUE

4. This is an action for patent infringement, arising under the patent laws of the United States, 35 U.S.C. §§ 1, *et seq.*

5. Subject matter jurisdiction is proper in this Court under 28 U.S.C. §§ 1331 and 1338(a).

6. Because Defendants are incorporated in this district, this Court has personal jurisdiction over Defendants.

7. Venue is proper in this judicial district under 28 U.S.C. §§ 1391(b), (c), and 1400(b).

COUNT I – INFRINGEMENT OF U.S. PATENT NO. 5,243,627

8. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-7 of this Complaint.

9. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,243,627, entitled “Signal Point Interleaving Technique” (“the ‘627 patent.”) (Exhibit A).

10. The ‘627 patent was duly and legally issued by the United States Patent and Trademark Office on September 7, 1993.

11. Defendants are operators of cable television systems throughout the United States.

12. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the ‘627 patent by practicing or causing others to practice (by inducement and/or contributorily) the inventions claimed in the ‘627 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the ‘627 patent by their receipt and retransmission over their cable television systems of digital terrestrial broadcast signals that comply with the ATSC Digital Television Standard.

13. Upon information and belief, Defendants will continue to infringe the ‘627 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and

will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT II – INFRINGEMENT OF U.S. PATENT NO. 5,852,631

14. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-13 of this Complaint.

15. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,852,631, entitled "System and Method for Establishing Link Layer Parameters Based on Physical Layer Modulation" ("the '631 patent.") (Exhibit B).

16. The '631 patent was duly and legally issued by the United States Patent and Trademark Office on December 22, 1998.

17. Defendants are operators of cable systems and providers of Internet service throughout the United States.

18. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the '631 patent by practicing or causing others to practice (by inducement and/or contributorily) the inventions claimed in the '631 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the '631 patent by providing high speed internet service to subscribers.

19. Upon information and belief, Defendants will continue to infringe the '631 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys' fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT III – INFRINGEMENT OF U.S. PATENT NO. 5,719,858

20. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-19 of this Complaint.

21. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,719,858, entitled “Time-Division Multiple-Access Method for Packet Transmission on Shared Synchronous Serial Buses” (“the ‘858 patent.”) (Exhibit C).

22. The ‘858 patent was duly and legally issued by the United States Patent and Trademark Office on February 17, 1998.

23. Defendants are operators of cable systems and providers of Internet service throughout the United States.

24. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the ‘858 patent by practicing or causing others to practice (by inducement and/or contributorily) the inventions claimed in the ‘858 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the ‘858 patent by their provision of high speed internet services, including such services as Voice over IP (VoIP), to subscribers.

25. Upon information and belief, Defendants will continue to infringe the ‘858 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys’ fees pursuant to 35 U.S. C. §§ 284 and 285.

COUNT IV – INFRINGEMENT OF U.S. PATENT NO. 4,937,819

26. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-25 of this Complaint.

27. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 4,937,819, entitled “Time Orthogonal Multiple Virtual DCE for Use in Analog and Digital Networks” (“the ‘819 patent.”) (Exhibit D).

28. The ‘819 patent was duly and legally issued by the United States Patent and Trademark Office on June 26, 1990.

29. Defendants are operators of cable systems and providers of Internet service throughout the United States.

30. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the ‘819 patent by practicing or causing others to practice (by inducement and/or contributorily) the inventions claimed in the ‘819 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the ‘819 patent by their provision of high speed internet services, such as Voice over IP (VoIP) services, to cable television subscribers.

31. Upon information and belief, Defendants will continue to infringe the ‘819 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys’ fees pursuant to 35 U.S.C. §§ 284 and 285.

COUNT V – INFRINGEMENT OF U.S. PATENT NO. 5,008,903

32. Rembrandt realleges and incorporates herein by reference the allegations stated in paragraphs 1-31 of this Complaint.

33. Rembrandt is the owner of all right, title and interest, including the right to sue, enforce and recover damages for all infringements, in U.S. Patent No. 5,008,903, entitled “Adaptive Transmit Pre-Emphasis For Digital Modem Computed From Noise Spectrum” (“the ‘903 patent.”) (Exhibit E).

34. The ‘903 patent was duly and legally issued by the United States Patent and Trademark Office on April 16, 1991.

35. Defendants are operators of cable systems and providers of Internet service throughout the United States.

36. Defendants have directly or indirectly infringed, and are continuing to directly or indirectly infringe, the ‘903 patent by practicing or causing others to practice (by inducement and/or contributorily) the inventions claimed in the ‘903 patent, in this district or otherwise within the United States. For example, Defendants have infringed and continue to infringe the ‘903 patent by providing high speed internet service to subscribers.

37. Upon information and belief, Defendants will continue to infringe the ‘903 patent unless enjoined by this Court. Upon information and belief, such infringement has been, and will continue to be, willful, making this an exceptional case and entitling Rembrandt to increased damages and reasonable attorneys’ fees pursuant to 35 U.S.C. §§ 284 and 285.

PRAYER FOR RELIEF

WHEREFORE, Rembrandt prays that it have judgment against Defendants for the following:

- (1) A decree that the Defendants have infringed the patents-in-suit;

(2) A permanent injunction enjoining and restraining Defendants and their agents, servants, employees, affiliates, divisions, and subsidiaries, and those in association with them, from making, using, offering to sell, selling, and importing into the United States any product, or using, offering to sell, or selling any service, which falls within the scope of any claim of the patents-in-suit;

(3) An award of damages;

(4) An award of increased damages pursuant to 35 U.S.C. § 284;

(5) An award of all costs of this action, including attorneys' fees and interest; and

(6) Such other and further relief, at law or in equity, to which Rembrandt is justly entitled.

JURY DEMAND

Rembrandt hereby demands a jury trial on all issues appropriately triable by a jury.

**WOMBLE CARLYLE SANDRIDGE &
RICE, PLLC**

/s/ Kevin M. Baird

George Pazuniak (# 478)

Gerard M. O'Rourke (# 3265)

Kevin M. Baird (# 4219)

James M. Lennon (#4570)

222 Delaware Avenue, Suite 1501

Wilmington, DE 19801

Tel: (302) 252-4320

Fax: (302) 661-7722

Counsel for Plaintiff Rembrandt Technologies, LP

Dated: October 13, 2006

EXHIBIT F

DOCSIS®

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CableLabs Press Release Policy

Guidelines for vendor companies publishing
press releases using CableLabs trademarks (i.
e., DOCSIS®, CableHome®, PacketCable™,
OpenCable™, and OCAP™). [more ->](#)

[Project Primer](#)

The CableLabs® Certified™ Cable Modem project, also known as DOCSIS® (Data Over Cable Service Interface Specification), defines interface requirements for cable modems involved in high-speed data distribution over cable television system networks (see [PowerPoint slide show](#)). The certified cable modem project also provides cable modem equipment suppliers with a fast, market-oriented method for attaining cable industry acknowledgment of DOCSIS compliance and has resulted in high-speed modems being certified for retail sale.

MSOs and CableLabs require interoperability among DOCSIS modems. While no CableLabs member company will be required to purchase DOCSIS modems, we expect the majority of modems purchased will be DOCSIS certified. MSOs and CableLabs require vendors seeking product certification to work with other vendors and CableLabs as part of the hot-staging for interoperability venues. Please refer to the links below to learn more about this certification process.

Benefits to cable operators/consumers:

- Cable operators can provide a variety of high-value services through an "always-on" internet connection, including broadband Internet connectivity, telephony, real-time interactive gaming, and video conferencing. DOCSIS products are standards-based, so manufacturers can provide enhanced features at competitive prices.
- Consumers have a low-cost way to get a broadband connection to the Internet so that they can take advantage of the tremendous potential of the web without investing a lot of time or money.

CableLabs is a research consortium; we do not market or sell cable modems.

For more information, please see our [project primer](#), or our [press release archives](#).

To find out if cable modem service is available in your area, please fill out and submit the [CableLabs Go2Broadband Service Locator form](#).

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ABOUT CABLELABS

Founded in 1988 by members of the cable

television industry, Cable Television

Laboratories, Inc. (CableLabs®) is a non-profit

research and development consortium that is

dedicated to pursuing new cable

telecommunications technologies and to helping

its cable operator members integrate those

technical advancements into their business

objectives.

Overview

An overview of CableLabs including information on CableLabs history, governance, and membership. [more ...](#)

Senior Staff

Read the personal histories and accomplishments of our senior staff members. [more ...](#)

Board of Directors

Gain insight into the leadership qualities of our distinguished board. [more ...](#)

Member Companies

Current listing of CableLabs membership. [more ...](#)

Open Positions

CableLabs currently has open positions. [details ...](#)

CableLabs Newsletter

A newsletter for member companies that is of general interest to the cable industry and lay audiences. [see current issue ...](#)

Contact Information

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OVERVIEW

Founded in 1988 by members of the cable television industry, Cable Television Laboratories, Inc. (CableLabs®) is a nonprofit research and development consortium that is dedicated to pursuing new cable telecommunications technologies and to helping its cable operator members integrate those technical advancements into their business objectives.

CableLabs serves the cable television industry by:

- researching and identifying new broadband technologies;
- authoring specifications;
- certifying products; and
- disseminating information.

CableLabs benefits the cable television industry and consumers by:

- enabling interoperability among different cable systems;
- facilitating retail availability of cable modems and advanced services; and
- helping cable operators deploy innovative broadband technologies.

CableLabs is funded by the monthly subscription fees paid by members as well as by testing-related fees. Cable operators from around the world are eligible to become members.

- [CableLabs History](#)
- [CableLabs Governance](#)
- [Membership](#)
- [Press Contact](#)

JS 44 (Rev. 3/99)

CIVIL COVER SHEET

The JS-44 civil cover sheet and the information contained herein neither replace nor supplement the filing and service of pleadings or other papers as required by law, except as provided by local rules of court. This form, approved by the Judicial Conference of the United States in September 1974, is required for the use of the Clerk of Court for the purpose of initiating the civil docket sheet. (SEE INSTRUCTIONS ON THE REVERSE OF THE FORM.)

I. (a) PLAINTIFFS

CoxCom, Inc.
1400 Lake Hearn Drive
Atlanta, GA 30319

DEFENDANTS

Rembrandt Technologies, L.P.
401 City Avenue, Suite 185
Bala Cynwyd, PA 19004

(b) COUNTY OF RESIDENCE OF FIRST LISTED PLAINTIFF
(EXCEPT IN U.S. PLAINTIFF CASES)

COUNTY OF RESIDENCE OF FIRST LISTED DEFENDANT
(IN U.S. PLAINTIFF CASES ONLY)

NOTE: IN LAND CONDEMNATION CASES, USE THE LOCATION OF THE TRACT OF LAND INVOLVED.

(c) ATTORNEYS (FIRM ADDRESS AND TELEPHONE NUMBER)

Rodger D. Smith II
Morris, Nichols, Arsht & Tunnell LLP
1201 North Market Street
Wilmington, DE 19801
(302) 658-9200

ATTORNEYS (IF KNOWN)

II. BASIS OF JURISDICTION (PLACE AN "X" IN ONE BOX ONLY)

- ☐ 1 U.S. Government Plaintiff
- ☒ 3 Federal Question (U.S. Government Not a Party)
- ☐ 2 U.S. Government Defendant
- ☐ 4 Diversity (Indicate Citizenship of Parties in Item III)

III. CITIZENSHIP OF PRINCIPAL PARTIES (PLACE AN "X" IN ONE BOX FOR PLAINTIFF AND ONE BOX FOR DEFENDANT)

- | | PTF | DEF | | PTF | DEF |
|---|----------------------------|----------------------------|---|----------------------------|----------------------------|
| Citizen of This State | <input type="checkbox"/> 1 | <input type="checkbox"/> 1 | Incorporated or Principal Place of Business in This State | <input type="checkbox"/> 4 | <input type="checkbox"/> 4 |
| Citizen of Another State | <input type="checkbox"/> 2 | <input type="checkbox"/> 2 | Incorporated and Principal Place of Business in Another State | <input type="checkbox"/> 5 | <input type="checkbox"/> 5 |
| Citizen or Subject of a Foreign Country | <input type="checkbox"/> 3 | <input type="checkbox"/> 3 | Foreign Nation | <input type="checkbox"/> 6 | <input type="checkbox"/> 6 |

IV. NATURE OF SUIT (PLACE AN "X" IN ONE BOX ONLY)

CONTRACT	TORTS	FORFEITURE/PENALTY	BANKRUPTCY	OTHER STATUTES
<input type="checkbox"/> 110 Insurance <input type="checkbox"/> 120 Marine <input type="checkbox"/> 130 Miller Act <input type="checkbox"/> 140 Negotiable Instrument <input type="checkbox"/> 150 Recovery of Overpayment & Enforcement of Judgement <input type="checkbox"/> 151 Medicare Act <input type="checkbox"/> 152 Recovery of Defaulted Student Loans (Excl Veterans) <input type="checkbox"/> 153 Recovery of Overpayment of Veteran's Benefits <input type="checkbox"/> 160 Stockholder Suits <input type="checkbox"/> 190 Other Contract <input type="checkbox"/> 195 Contract Product Liability	PERSONAL INJURY <input type="checkbox"/> 310 Airplane <input type="checkbox"/> 315 Airplane Product Liability <input type="checkbox"/> 320 Assault Libel & Slander <input type="checkbox"/> 330 Federal Employers Liability <input type="checkbox"/> 340 Marine <input type="checkbox"/> 345 Marine Product Liability <input type="checkbox"/> 350 Motor Vehicle <input type="checkbox"/> 355 Motor Vehicle Product Liability <input type="checkbox"/> 360 Other Personal Injury PERSONAL INJURY <input type="checkbox"/> 362 Personal Injury - Med Malpractice <input type="checkbox"/> 365 Personal Injury - Product Liability <input type="checkbox"/> 368 Asbestos Personal Injury Product Liability PERSONAL PROPERTY <input type="checkbox"/> 370 Other Fraud <input type="checkbox"/> 371 Truth in Lending <input type="checkbox"/> 380 Other Personal <input type="checkbox"/> 385 Property Damage Product Liability	<input type="checkbox"/> 610 Agriculture <input type="checkbox"/> 620 Other Food & Drug <input type="checkbox"/> 625 Drug Related Seizure of Property 21 USC 861 <input type="checkbox"/> 630 Liquor Laws <input type="checkbox"/> 640 R R & Truck <input type="checkbox"/> 650 Airline Regs <input type="checkbox"/> 660 Occupational Safety/Health <input type="checkbox"/> 690 Other LABOR <input type="checkbox"/> 710 Fair Labor Standards Act <input type="checkbox"/> 720 Labor/Mgmt. Relations <input type="checkbox"/> 730 Labor Mgmt. Reporting & Disclosure Act <input type="checkbox"/> 740 Railway Labor Act <input type="checkbox"/> 790 Other Labor Litigation <input type="checkbox"/> 791 Empl Ret Inc Security Act	<input type="checkbox"/> 422 Appeal 28 USC 158 <input type="checkbox"/> 423 Withdrawal 28 USC 157 PROPERTY RIGHTS <input type="checkbox"/> 820 Copyrights <input type="checkbox"/> 830 Patent <input type="checkbox"/> 840 Trademark SOCIAL SECURITY <input type="checkbox"/> 881 HIA (1395ff) <input type="checkbox"/> 882 Black Lung (923) <input type="checkbox"/> 883 DIWC/DIWW (405(g)) <input type="checkbox"/> 884 SSID Title XVI <input type="checkbox"/> 885 RSI (405(g)) FEDERAL TAX SUITS <input type="checkbox"/> 870 Taxes (U.S. Plaintiff or Defendant) <input type="checkbox"/> 871 IRS - Third Party 26 USC 7609	<input type="checkbox"/> 400 State Reapportionment <input type="checkbox"/> 410 Antitrust <input type="checkbox"/> 430 Banks or Banking <input type="checkbox"/> 450 Commerce/ICC Rates/etc <input type="checkbox"/> 460 Deportation <input type="checkbox"/> 470 Racketeer Influenced and Corrupt Organizations <input type="checkbox"/> 810 Selective Service <input type="checkbox"/> 850 Securities/Commodities/Exchange <input type="checkbox"/> 875 Customer Challenge 12 USC 3410 <input type="checkbox"/> 891 Agricultural Acts <input type="checkbox"/> 892 Economic Stabilization Act <input type="checkbox"/> 893 Environmental Matters <input type="checkbox"/> 894 Energy Allocation Act <input type="checkbox"/> 895 Freedom of Information Act <input type="checkbox"/> 900 Appeal of Fee Determination Under Equal Access to Justice <input type="checkbox"/> 950 Constitutionality of State Statutes <input type="checkbox"/> 890 Other Statutory Actions
REAL PROPERTY <input type="checkbox"/> 210 Land Condemnation <input type="checkbox"/> 220 Foreclosure <input type="checkbox"/> 230 Rent Lease & Ejectment <input type="checkbox"/> 240 Torts to Land <input type="checkbox"/> 245 Tort Product Liability <input type="checkbox"/> 290 All Other Real Property	CIVIL RIGHTS <input type="checkbox"/> 441 Voting <input type="checkbox"/> 442 Employment <input type="checkbox"/> 443 Housing/Accommodations <input type="checkbox"/> 444 Welfare <input type="checkbox"/> 440 Other Civil Rights	PRISONER PETITIONS <input type="checkbox"/> 510 Motions to Vacate Sentence <input type="checkbox"/> 530 General <input type="checkbox"/> 535 Death Penalty <input type="checkbox"/> 540 Mandamus & Other <input type="checkbox"/> 550 Civil Rights <input type="checkbox"/> 555 Prison Condition		

V. ORIGIN

(PLACE AN "X" IN ONE BOX ONLY)

- ☒ 1 Original Proceeding
- ☐ 2 Removed From State Court
- ☐ 3 Remanded From Appellate Court
- ☐ 4 Reinstated or Reopened
- ☐ 5 Transferred From another district (specify) _____
- ☐ 6 Multidistrict Litigation
- ☐ 7 Appeal to District Judge from Magistrate Judgement

VI. CAUSE OF ACTION

(CITE THE U.S. CIVIL STATUTE UNDER WHICH YOU ARE FILING AND WRITE BRIEF STATEMENT OF CAUSE DO NOT CITE JURISDICTIONAL STATUTES UNLESS DIVERSITY)

Declaratory judgment (28 U.S.C. §§ 2201, 2202) of non-infringement, invalidity and unenforceability (35 U.S.C. §§ 271, et seq.)

VII. REQUESTED IN COMPLAINT**DEMAND \$**

CHECK YES only if demanded in complaint:

☐ CHECK IF THIS IS A CLASS ACTION UNDER F.R.C.P. 23

JURY DEMAND: ☐ YES ☒ NO**VIII. RELATED CASE(S) IF ANY** (See Instructions)JUDGE SleetDOCKET NUMBER C.A. 06-635-GMS

DATE

SIGNATURE OF ATTORNEY OF RECORD

FOR OFFICE USE ONLY

RECEIPT # _____ AMOUNT _____ APPLYING IFP _____ JUDGE _____ MAG. JUDGE _____

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United States District Court for the District of Delaware

Civil Action No. 06-721

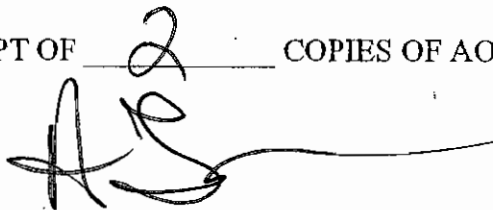
ACKNOWLEDGMENT
OF RECEIPT FOR AO FORM 85

NOTICE OF AVAILABILITY OF A
UNITED STATES MAGISTRATE JUDGE
TO EXERCISE JURISDICTION

I HEREBY ACKNOWLEDGE RECEIPT OF 2 COPIES OF AO FORM 85.

11-30-06

(Date forms issued)



(Signature of Party or their Representative)

Aaron Johnston

(Printed name of Party or their Representative)

Note: Completed receipt will be filed in the Civil Action